(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 708 690 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
07.03.2001 Bulletin 2001/10

(21) Application number: **95918393.0**

(22) Date of filing: **04.05.1995**

(51) Int Cl.[7]: **B07B 1/49**

(86) International application number:
PCT/US95/05592

(87) International publication number:
WO 95/30497 (16.11.1995 Gazette 1995/49)

(54) **SYSTEM AND METHOD FOR CHANGING SIZING SCREEN**

SYSTEM UND VERFAHREN ZUM WECHSELN EINES KLASSIERSIEBES

SYSTEME ET PROCEDE DE CHANGEMENT DE CRIBLE-CLASSEUR

(84) Designated Contracting States:
DE

(30) Priority: **04.05.1994 US 237656**

(43) Date of publication of application:
01.05.1996 Bulletin 1996/18

(73) Proprietor: **CMI Limited Partnership**
Oklahoma City, OK 73101 (US)

(72) Inventors:
- **MCINTYRE, Murray**
  Burns Flat, OK 73624 (US)
- **GALLO, Jerome**
  New Berlin, WI 53151 (US)

(74) Representative: **Grünecker, Kinkeldey,**
Stockmair & Schwanhäusser Anwaltssozietät
Maximilianstrasse 58
80538 München (DE)

(56) References cited:
US-A- 2 230 475
US-A- 4 175 710
US-A- 4 505 812
US-A- 5 213 273
US-A- 5 344 088

EP 0 708 690 B1

Description

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to materials grinding and processing machines and, more particularly, to systems and methods for changing sizing screens in such machines.

[0002] Waste disposal, and in particular, the disposal of construction, demolition and similar debris, is a serious and growing problem. Although such debris consists principally of relatively clean, non-hazardous materials such as pavement, bricks, lumber, shingles, glass and the like, the shear bulk of such materials can make their disposal a challenge. Accordingly, various machines have been developed for grinding, shredding and otherwise reducing such materials to a more compact and easily handled form.

[0003] In one form of materials processing machine, such as that shown in GB-A-2260504, improved grinding and shredding action is achieved through use of a sizing screen concave which positions a sizing screen adjacent a rotary hammer or drum to further process partially comminuted material. Although effective, the sizing screen is subjected to terrific punishment and must be reversed and replaced from time to time. Different forms of sizing screens can be installed to vary the final product size. For these reasons, it is necessary to change sizing screens several times in the life of a materials processing machine.

[0004] Typically, several hours were required to change a sizing screen in a materials processing machine of the type shown in GB-A-2260504. Not only do labor costs associated with changing a sizing screen become significant when considerable time is required to change the screen, but the machine is out of service and, hence, unproductive during this time. There is a need, therefore, to reduce and minimize the time required to change sizing screens in a materials processing machine.

SUMMARY OF THE INVENTION

[0005] The invention provides a method of changing a sizing screen in a materials processing machine of the type having a sizing concave pivotally attached at its upper end to a frame and further having a hydraulic cylinder coupled between the frame and the sizing concave to move the sizing concave around the pivot, the sizing screen being mounted within the sizing concave, said method comprising the steps of:

pivotally connecting the sizing concave at its lower end to the frame;
releasing the pivotal connection at the upper end of the sizing concave to allow relative lateral movement between the upper end of the sizing concave and the frame; and
pivoting the sizing concave around the pivotal connection at the lower end of the sizing concave to provide access from above to the sizing screen therein contained.

[0006] In one embodiment, the hydraulic cylinder is detached from the sizing concave and is reattached at a different point on the sizing concave to improve access to the sizing screen contained within the sizing concave.

[0007] The invention also provides a material processing machine having a sizing screen quick-change capability, said materials processing machine comprising:

a frame;
a sizing concave pivotally connected at its upper end to said frame;
a sizing screen mounted on said sizing concave;
a hydraulic cylinder coupled between said frame and said sizing concave; a selectively engagable pivot adjacent the lower end of said sizing concave for temporarily pivotally connecting said sizing concave to said frame adjacent said lower end of said sizing concave, and
means for releasing the pivotal connection at the upper end of the sizing concave to allow relative lateral movement between the upper end of the sizing concave and the frame.

[0008] In one embodiment, the hydraulic cylinder can be coupled to either one of a primary and secondary point of attachment on the sizing concave.

[0009] It is an object of the present invention to provide a new and improved system and method for changing sizing screens in a materials processing machine.

[0010] It is a further object of the present invention to provide a new and improved system for changing sizing screens in a materials processing machine that is quick and convenient and avoids placing the materials processing machine out of operation for extended periods of time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The features of the present invention that are believed to be novel are set forth with particularity in the appended claims. The invention, together with the further objects and advantages thereof, may best be understood by reference to the following description taken in conjunction with the accompanying drawings, wherein like reference numerals identify like elements, and wherein:

[0012] FIGURE 1 is a perspective view of a materials processing machine having a sizing concave containing a sizing screen within.

[0013] FIGURE 2 is a side view, partially in section, of the sizing concave contained in the materials processing machine shown in FIG. 1.

[0014] FIGURE 3 is a fragmentary front elevation view of the sizing concave contained in the materials processing machine of FIG. 1.

[0015] FIGURE 4 is a diagrammatic side view of the sizing concave shown in an operating position prior to changing the sizing screen in accordance with the system and method of the present invention.

[0016] FIGURE 5 is a diagrammatic view similar to FIG. 4 showing the sizing concave moved to a position where it is temporarily pivotally connected adjacent its lower end to the frame of the materials processing machine.

[0017] FIGURE 6 is diagrammatic view similar to FIG. 5 wherein a hydraulic extension cylinder initially attached at one point on the sizing concave is retracted and reattached to a different point on the sizing concave.

[0018] FIGURE 7 is a diagrammatic view similar to FIG. 6 showing the hydraulic cylinder being extended to pivot the sizing concave around the temporary pivot to provide access from above to the sizing screen contained in the sizing concave.

[0019] FIGURE 8 is a diagrammatic view similar to FIG. 7 showing the sizing screen being lifted, from above, from the sizing concave.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] Referring to the drawings, a materials grinding and processing machine 10 is shown in FIG. 1. The materials grinding and processing machine 10, which preferably is of the type shown in GB-A-2260504, functions broadly to convert bulky solid materials, such as pavement, bricks, lumber, shingles, glass and the like into a shredded, ground or otherwise more compact and easily handled form. The machine 10 generally includes a frame 12 and a hopper 14 for receiving the materials to be processed. A ram 16 at one end of hopper 14 forces the materials toward a rotary drum or hammer 18 located at the other end of the hopper 14. The rotary drum or hammer 18, in conjunction with a cutting bar (not shown) and a sizing screen 20 (FIG. 2) shreds, grinds or otherwise comminutes the materials. The comminuted materials are then discharged onto a conveyor 22 for removal. The sizing screen 20 is mounted within a sizing concave 24 mounted adjacent the discharge end of the materials grinding and processing machine 10.

[0021] Referring to FIGS. 2 and 3, the sizing screen 20 comprises an arcuate, foraminous plate conforming generally to the outer circumferential periphery of the rotary drum or hammer 18. The sizing screen 20 has a generally rectangular outer periphery and is mounted within the sizing concave 24 in alignment with the rotary drum or hammer 18. Although the spacing between the sizing screen 20 and rotary drum 18 has been exaggerated in FIG. 2 for clarity, the sizing screen 20, in ordinary use, lies closely adjacent the rotary drum 18 (see FIG. 4). During operation, the materials to be processed are further broken up and reduced by passing between the rotary drum or hammer 18 and the sizing screen 20. As the materials are reduced to a size sufficiently small to pass through the perforations in the sizing screen 20, the materials fall from the sizing concave 24 onto the conveyor 22.

[0022] Referring further to FIGS. 2 and 3, the sizing concave 24 is roughly triangular in cross section and includes an upper end 26, a lower end 28 and an outer end 30. The sizing screen 20 is positioned across the sizing concave 24 roughly between the upper and lower ends 26, 28. The sizing concave 24 is pivotally joined adjacent the upper end 26 to the frame 12 of the materials grinding and processing machine 10 for movement around an upper pivot axis 32. In ordinary use, the sizing concave 24 can rotate around this upper pivot 32 so that the lower end 28 of the sizing concave 24 can swing away from the rotary drum or hammer 18. This permits large ungrindable materials to pass through the rotary drum or hammer 18 without jamming the machine. A hydraulic cylinder 34 (FIG. 4) having one end 36 coupled to the sizing concave 24 and another end 38 coupled to the frame 12 of the materials grinding and processing machine 10 biases the sizing concave 24 toward the rotary drum or hammer 18 to hold the sizing screen 20 in close proximity to the rotary drum or hammer 18 during normal operation. In the event a large, ungrindable chunk of material is encountered, the hydraulic cylinder 34 allows the sizing concave 24 temporarily to swing away from the rotary drum or hammer 18 to permit passage of the chunk. Thereafter, the sizing concave 24 returns to the normal operating position.

[0023] Typically, the sizing screen 20 is formed of a thick metal plate (e.g., one inch steel) and weighs several hundred pounds. Because of the harsh environment in which it works, the sizing screen 20 is subjected to terrific punishment and wear and can need frequent replacement. Similarly, different size apertures in the sizing screen 20 are desirable depending on the materials to be ground and the desired size of the comminuted final product. Finally, extended sizing screen life can be achieved by periodically reversing the sizing screen 20 end-for-end so as to promote more even and balanced wear. For these reasons, it is frequently necessary to remove the sizing screen 20 from the sizing concave 24.

[0024] The complete removal and disassembly of the sizing concave 24 is a complicated task that requires several hours to perform. To reduce this time, the materials grinding and processing machine 10 is configured to provide a "quick-change" procedure for removing, replacing or otherwise changing the materials processing sizing screen 20.

[0025] The "quick-change" method for changing the sizing screen 20 is illustrated in FIGS. 4-8. From the initial, ordinary operating position shown in FIG. 4, the sizing concave 24 is first pivoted around the upper pivot 32 to a partially open position shown in FIG. 5. In the illus-

trated embodiment, the sizing concave 24 is moved to this position by partially extending the hydraulic cylinder 34.

[0026] After the sizing concave 24 is moved to the partially open position shown in FIG. 5, the lower end 28 of the sizing concave 24 is temporarily pivotally connected to the frame 12 of the materials grinding and processing machine 10. In the illustrated embodiment, the temporary, lower pivotal connection is made using coaxially alignable holes 40 formed in both the frame 12 and the lower end 28 of the sizing concave 24. When the sizing concave 24 is in the partially open position shown in FIG. 5, the holes 40 formed in both the lower end 28 of the sizing concave 24 and the frame 12 are coaxially aligned. Next, a removable pivot pin 42 is inserted through the aligned holes 40 to pivotally secure the lower end 28 of the sizing concave 24 to the frame 12. In the illustrated embodiment, it will be understood that two such pairs of coaxially alignable holes 40 are provided, one pair in each side of the sizing concave 24. It will also be understood that two pivot pins 42 are similarly provided. When the pivot pins 42 are not being used to pivotally secure the lower end 28 of the sizing concave 24 to the frame 12 as shown in FIG. 5, the pins 42 are stored in additional holes 44 formed in the frame 12.

[0027] After the sizing concave 24 is temporarily pivotally secured adjacent its lower end 28 to the machine frame 12, the pivotal connection 32 at the upper end 26 of the sizing concave 24 is released to permit the upper end 28 of the sizing concave 24 to swing away from the rotary drum or hammer 18 and thereby provide access to the sizing screen 20 from above. In the illustrated embodiment, the pivoting connection 32 at the upper end 26 of the sizing concave 24 is provided by means of a pin 46 extending outwardly from the upper end 26 of the sizing concave 24. One such pin 46 is provided at each side of the sizing concave 24. The pins 46, in turn, extend through arcuate slots 48 formed in the machine frame 12. Ordinarily, the pins 46 are prevented from moving laterally along the slots 48 by means of removable keepers 50 bolted to the machine frame 12. With the keepers 50 in place, the pins 46 are blocked against lateral movement but the sizing concave 24 is nevertheless permitted to pivot around the pins 46. With the keepers 50 removed (FIG. 7) the pins 46 are free to travel laterally within the slots 48 to permit lateral movement between the upper end 26 of the sizing concave 24 and the frame 12 (FIG. 8).

[0028] By reference to FIG. 8, it will be appreciated how the use of a temporary pivot at the lower end 28 of the sizing concave 24 in conjunction with a temporary release of the pivot connection 32 at the upper end 36 of the sizing concave 24 provides sufficient access from above to enable removal and installation of the sizing screen 20 without requiring complete removal or disassembly of the sizing concave 24.

[0029] In the illustrated embodiment, movement of the sizing concave 24 can be facilitated by reconnecting the hydraulic cylinder 34 from a primary point of attachment 52 on the sizing concave 24 to a secondary point of attachment 54. Specifically, after the sizing concave 24 has been moved to the partially open position shown in FIG. 5 and pivotally attached adjacent its lower end 28 to the frame 12, the end 36 of the hydraulic cylinder 34 is disconnected from its primary point of attachment 52 and is reattached to the secondary point of attachment 54. Thereafter, the upper pivot 32 is released (FIG. 7) and the hydraulic cylinder 34 is extended to move the sizing concave 24 to the fully open position shown in FIG. 8. Preferably, the secondary point of attachment 54 is located along a line segment extending between the primary point of attachment 52 and the upper pivot point 32. By reattaching the hydraulic cylinder 34 in this manner, the sizing concave 24 can be opened more fully than would be the case if the cylinder 34 were not so reattached.

[0030] Once the sizing screen 20 has been removed, different sizing screens can be dropped into place by reversing the steps shown in FIGS. 4-8. The system and method herein shown and described greatly reduces the time needed to replace a materials processing sizing screen 20. Specifically, complete removal of the sizing concave 24 is avoided, as are the difficulties associated with trying to replace the sizing screen 20 from below.

[0031] While a particular embodiment of the invention has been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects, and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the scope of the claims.

Claims

1. A method of changing a sizing screen in a materials processing machine of the type having a sizing concave pivotally attached at its upper end to a frame and further having a hydraulic cylinder coupled between the frame and the sizing concave to move the sizing concave around the pivot, the sizing screen being mounted within the sizing concave, said method comprising the steps of:

pivotally connecting the sizing concave at its lower end to the frame;

releasing the pivotal connection at the upper end of the sizing concave to allow relative lateral movement between the upper end of the sizing concave and the frame; and

pivoting the sizing concave around the pivotal connection at the lower end of the sizing concave to provide access from above to the sizing screen therein contained.

2. A method as defined in Claim 1 further comprising

the step of detaching the hydraulic cylinder from a primary point of attachment on the sizing concave and reattaching the hydraulic cylinder to a secondary point of attachment on the sizing concave to provide increased access to the sizing screen contained in the sizing concave.

3. A method as defined in Claim 2 wherein said secondary point of attachment is located substantially along a line segment extending between the primary point of attachment and the pivotal connection between the upper end of the sizing concave and the frame.

4. A method as defined in Claim 3 wherein the hydraulic cylinder is moved from the primary point of attachment to the secondary point of attachment after the sizing concave is pivotally connected at the lower end to the frame and before the sizing concave is pivoted around the pivotal connection at the lower end of the sizing concave to provide access from above to the sizing screen therein contained.

5. A method as defined in Claim 4 further comprising the steps of:

lifting the sizing screen from the sizing concave after the sizing concave has been pivoted around the pivotal connection at the lower end of the sizing concave;
lowering a sizing screen onto the sizing concave; and
returning the sizing concave to an ordinary use position.

6. A method as defined in Claim 5 wherein the sizing concave is returned to the use position by reversing the steps used to gain access from above to the sizing screen contained in the sizing concave.

7. A materials processing machine having a sizing screen quick-change capability, said materials processing machine comprising:

a frame;
a sizing concave pivotally connected at its upper end to said frame;
a sizing screen mounted on said sizing concave;
a hydraulic cylinder coupled between said frame and said sizing concave;
a selectively engagable pivot adjacent the lower end of said sizing concave for temporarily pivotally connecting said sizing concave to said frame adjacent said lower end of said sizing concave, and
means for releasing the pivotal connection at the upper end of the sizing concave to allow relative lateral movement between the upper end of the sizing concave and the frame.

8. A materials processing machine as defined in Claim 7 wherein said selectively engagable pivot includes a pair of coaxially alignable apertures formed, respectively, in said sizing concave and said frame and further includes a pivot pin insertable in said coaxially alignable apertures.

9. A materials processing machine as defined in Claim 8 wherein said hydraulic cylinder is coupled at one end to said frame and at another end to either one of a primary and secondary point of attachment.

10. A materials processing machine as defined in Claim 9 wherein said secondary point of attachment is located substantially along a line segment extending between said primary point of attachment and said pivotal connection between said frame and said upper end of said sizing concave.

Patentansprüche

1. Verfahren zum Austauschen eines Klassiersiebes in einer Materialverarbeitungsvorrichtung eines Typs, bei dem ein Klassierkonkavprofil an seinem oberen Ende schwenkbar an einem Rahmen gelagert ist und bei dem ein Hydraulikzylinder zwischen dem Rahmen und dem Klassierkonkavprofil zur Bewegung des Klassierkonkavprofils um das Schwenklager angeordnet ist, wobei das Klassiersieb in dem Klassierkonkavprofil montiert ist, wobei das Verfahren die folgenden Schritte aufweist:

schwenkbares Verbinden des Klassierkonkavprofils mit seinem unteren Ende am Rahmen;

Lösen der Schwenkverbindung am oberen Ende des Klassierkonkavprofils, um eine relative Lateralbewegung zwischen oberem Ende des Klassierkonkavprofils und Rahmen zu ermöglichen; und

Verschwenken des Klassierkonkavprofils um die Schwenkverbindung am unteren Ende des Klassierkonkavprofils zum Zutritt von oben zu dem im Profil enthaltenen Klassiersieb.

2. Verfahren nach Anspruch 1, **gekennzeichnet durch** den weiteren Schritt des Lösens des Hydraulikzylinders von einem primären Befestigungspunkt am Klassierkonkavprofil und Wiederbefestigen des Hydraulikzylinders an einem sekundären Befestigungspunkt am Klassierkonkavprofil zur Schaffung eines vergrößerten Zugangs zum im Klassierkonkavprofil enthaltenen Klassiersieb.

3. Verfahren nach Anspruch 2, **dadurch gekennzeichnet,** daß der zweite Befestigungspunkt im wesentlichen entlang eines Liniensegments angeordnet ist, das sich zwischen dem primären Befestigungspunkt und der Schwenkverbindung zwischen oberem Ende des Klassierkonkavprofils und Rahmen erstreckt.

4. Verfahren nach Anspruch 3, **dadurch gekennzeichnet,** daß der Hydraulikzylinder vom primären Befestigungspunkt zum sekundären Befestigungspunkt nach Schwenkverbinden des Klassierkonkavprofils an seinem unteren Ende mit dem Rahmen und vor Verschwenken des Klassierkonkavprofils um die Schwenkverbindung an seinem unteren Ende bewegt wird, um Zutritt von oben zu dem im Konkavprofil enthaltenen Klassiersieb zu schaffen.

5. Verfahren nach Anspruch 4, **gekennzeichnet durch** die weiteren Schritte:

Anheben des Klassiersiebes von dem Klassierkonkavprofil nach dessen Verschwenken um die Schwenkverbindung am unteren Ende des Klassierkonkavprofils;

Absenken eines Klassiersiebes auf das Klassierkonkavprofil; und

Zurückkehren des Klassierkonkavprofils in eine gewöhnliche Verwendungsstellung.

6. Verfahren nach Anspruch 5, **dadurch gekennzeichnet,** daß das Klassierkonkavprofil in seine Verwendungsstellung durch Umkehren der Schritte zum Erreichen eines Zutritts von oben zum in dem Klassierkonkavprofil enthaltenen Klassiersieb zurückkehrt.

7. Materialverarbeitungsvorrichtung mit einer Klassiersiebschnellwechselmöglichkeit, wobei die Materialverarbeitungsvorrichtung aufweist:

einen Rahmen;

ein schwenkbar an seinem oberen Ende am Rahmen gelagertes Klassierkonkavprofil;

ein auf dem Klassierkonkavprofil montiertes Klassiersieb;

einen zwischen dem Rahmen und dem Klassierkonkavprofil gekoppelten Hydraulikzylinder;

ein selektiv angreifbares Schwenklager benachbart zum unteren Ende des Klassierkonkavprofils zum zeitweiligen schwenkbaren Verbinden des Klassierkonkavprofils mit dem Rahmen benachbart zum unteren Endes des Klassierkonkavprofils; und

eine Löseeinrichtung zum Lösen der Schwenkverbindung am oberen Ende des Klassierkonkavprofils, um eine relative Lateralbewegung zwischen dem oberen Ende des Klassierkonkavprofils und dem Rahmen zu ermöglichen.

8. Materialverarbeitungsvorrichtung nach Anspruch 7, **dadurch gekennzeichnet,** daß das selektiv angreifbare Schwenklager ein Paar von koaxial ausgerichtete Öffnungen aufweist, welche entsprechend in dem Klassierkonkavprofil und dem Rahmen gebildet sind, und weiterhin einen Schwenkstift aufweist, der in die koaxial ausgerichteten Öffnungen einsetzbar ist.

9. Materialverarbeitungsvorrichtung nach Anspruch 8, **dadurch gekennzeichnet,** daß der Hydraulikzylinder an einem Ende mit dem Rahmen und an seinem anderen Ende mit entweder einem primären oder sekundären Befestigungspunkt gekoppelt ist.

10. Materialverarbeitungsvorrichtung nach Anspruch 9, **dadurch gekennzeichnet,** daß der sekundäre Befestigungspunkt im wesentlichen entlang eines Liniensegments angeordnet ist, welches sich zwischen dem primären Befestigungspunkt und der Schwenkverbindung zwischen Rahmen und oberem Ende des Klassierkonkavprofils erstreckt.

Revendications

1. Procédé de changement de crible-classeur dans une machine de traitement de matériaux du type ayant un concave de classement fixé en rotation par son extrémité supérieure à un cadre et ayant en outre un vérin hydraulique couplé entre le cadre et le concave de classement pour déplacer le concave de classement autour du pivot, le crible-classeur étant monté à l'intérieur du concave de classement, ledit procédé comprenant les étapes de :

fixer en rotation le concave de classement par son extrémité inférieure au cadre;
libérer la fixation pivotante à l'extrémité supérieure du concave de classement pour permettre le déplacement latéral relatif entre l'extrémité supérieure du concave de classement et le cadre; et
pivoter le concave de classement autour de la fixation pivotante à l'extrémité inférieure du concave de classement pour fournir un accès à partir du dessus au crible-classeur contenu à

l'intérieur.

2. Procédé selon la revendication 1 comprenant en outre l'étape de détacher le vérin hydraulique d'un point de fixation primaire sur le concave de classement et de rattacher le vérin hydraulique à un point de fixation secondaire sur le concave de classement pour fournir un accès amélioré au crible-classeur contenu dans le concave de classement.

3. Procédé selon la revendication 2, dans lequel ledit point de fixation secondaire est situé substantiellement le long d'un segment de droite s'étendant entre le point de fixation primaire et la fixation pivotante entre l'extrémité supérieure du concave de classement et le cadre.

4. Procédé selon la revendication 3, dans lequel le vérin hydraulique est déplacé du point de fixation primaire au point de fixation secondaire après que le concave de classement est fixé en rotation à l'extrémité inférieure du cadre et avant que le concave de classement soit pivoté autour de la fixation pivotante à l'extrémité inférieure du concave de classement pour fournir un accès à partir du dessus au crible-classeur contenu à l'intérieur.

5. Procédé selon la revendication 4 comprenant en outre les étapes de :

lever le crible-classeur du concave de classement après que le concave de classement a été pivoté autour de la fixation pivotante à l'extrémité inférieure du concave de classement;
descendre un crible-classeur sur le concave de classement; et ramener le concave de classement dans une position d'utilisation ordinaire.

6. Procédé selon la revendication 5, dans lequel le concave de classement est ramené dans la position d'utilisation en inversant les étapes employées pour obtenir l'accès à partir du dessus du crible-classeur contenu dans le concave de classement.

7. Machine de traitement de matériaux ayant une possibilité de changement rapide de crible-classeur, ladite machine de traitement de matériaux comprenant :

un cadre;
un concave de classement fixé en rotation à son extrémité supérieure audit cadre;
un crible-classeur monté sur ledit concave de classement;
un vérin hydraulique couplé entre ledit cadre et ledit concave de classement:
un pivot pouvant être engagé sélectivement adjacent à l'extrémité inférieure dudit concave de classement pour fixer temporairement en rotation ledit concave de classement audit cadre adjacent à ladite extrémité inférieure dudit concave de classement, et
un moyen pour libérer la fixation pivotante à l'extrémité supérieure du concave de classement pour permettre un mouvement latéral relatif entre l'extrémité supérieure du concave de classement et le cadre.

8. Machine de traitement de matériaux selon la revendication 7, dans laquelle ledit pivot pouvant être engagé sélectivement comprend une paire d'ouvertures alignables coaxialement respectivement formées dans ledit concave de classement et ledit cadre et comprend en outre un axe de pivot insérable dans lesdites ouvertures alignables coaxialement.

9. Machine de traitement de matériaux selon la revendication 8, dans laquelle ledit vérin hydraulique est couplé à une extrémité audit cadre et à une autre extrémité à un quelconque d'un point de fixation primaire et secondaire.

10. Machine de traitement de matériaux selon la revendication 9, dans laquelle ledit point de fixation secondaire est situé substantiellement sur un segment de droite s'étendant entre ledit point de fixation primaire et ladite fixation pivotante entre ledit cadre et ladite extrémité supérieure dudit concave de classement.

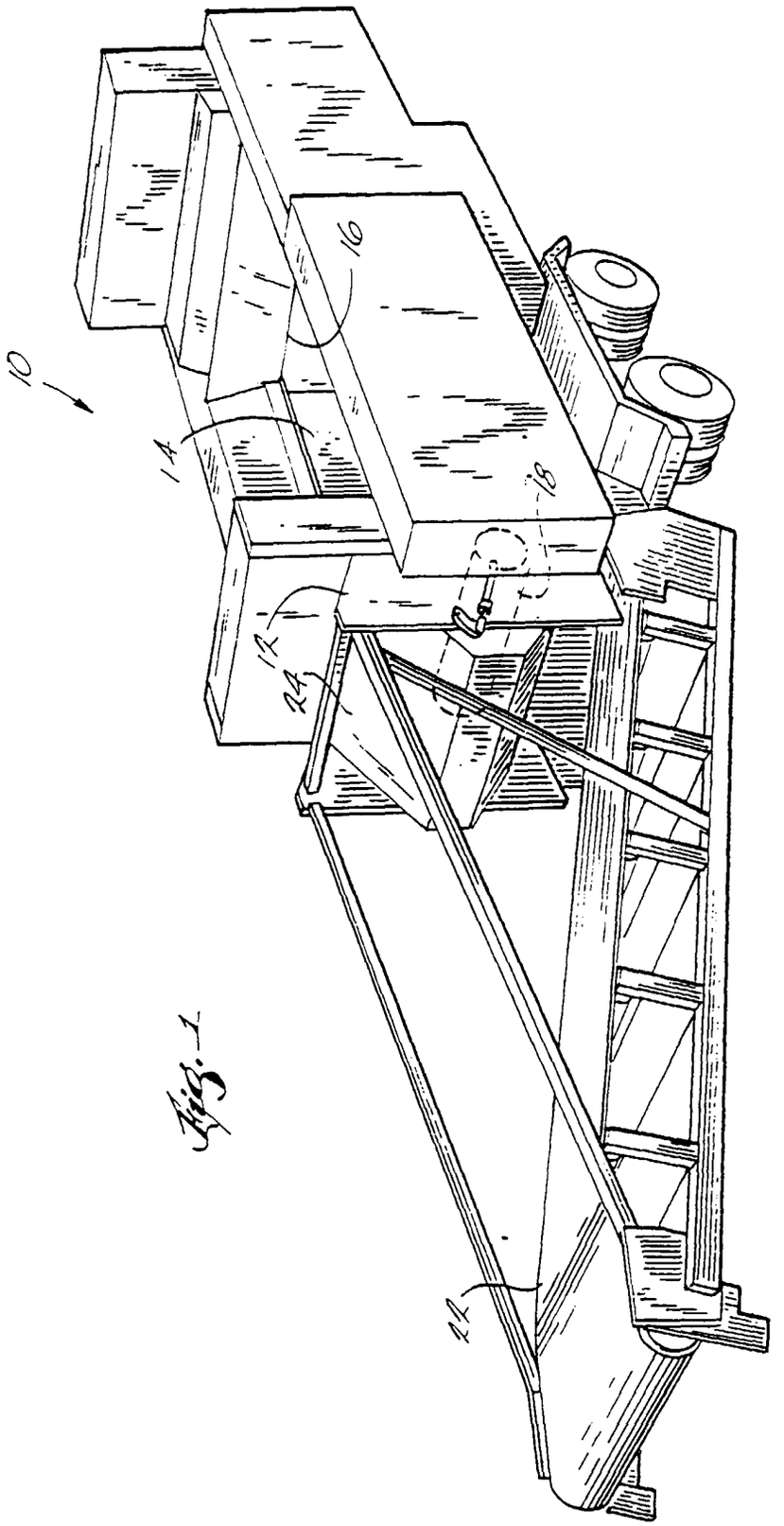

Fig. 1

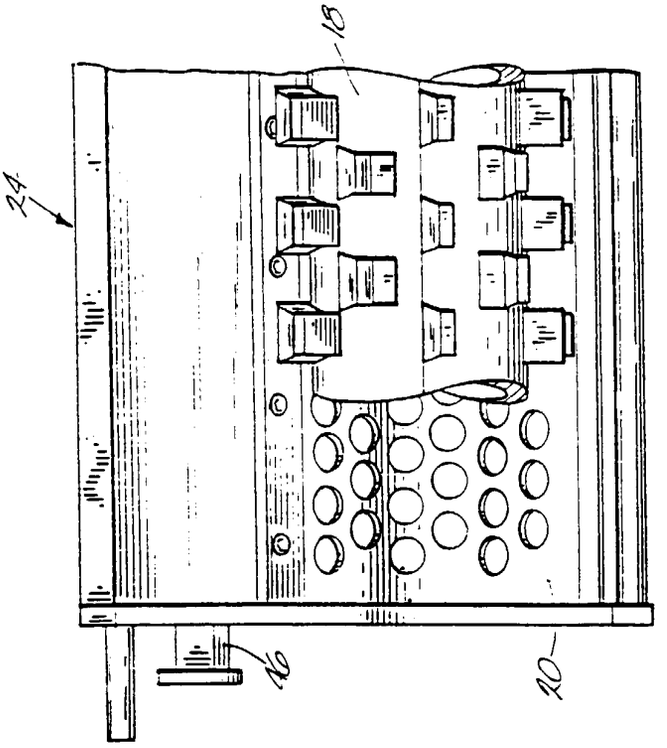

Fig. 3

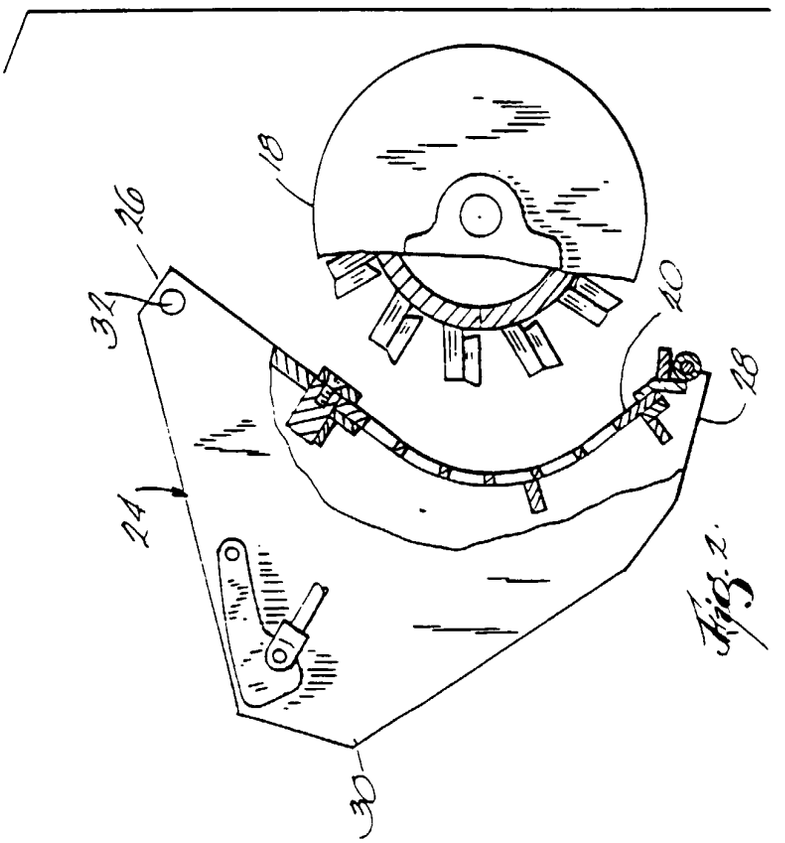

Fig. 2.

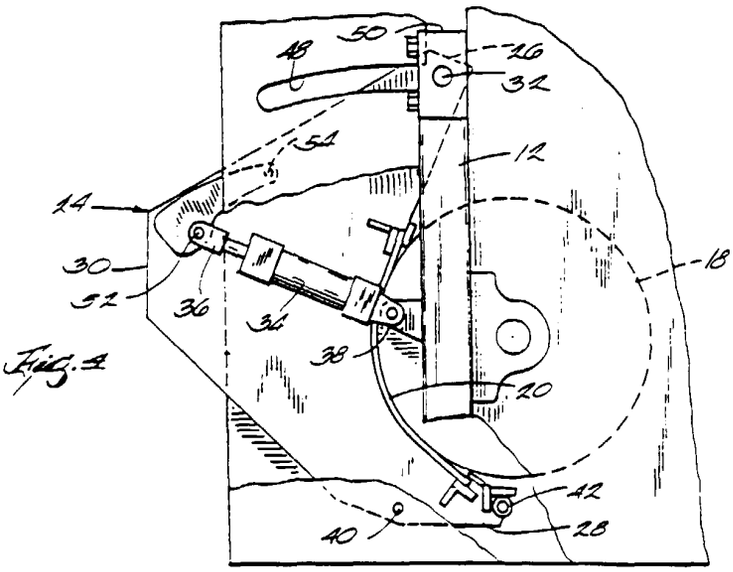

Fig. 4

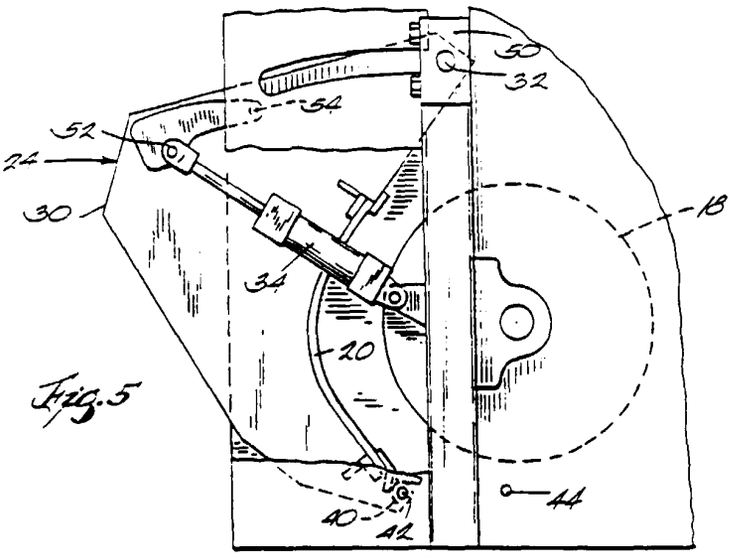

Fig. 5

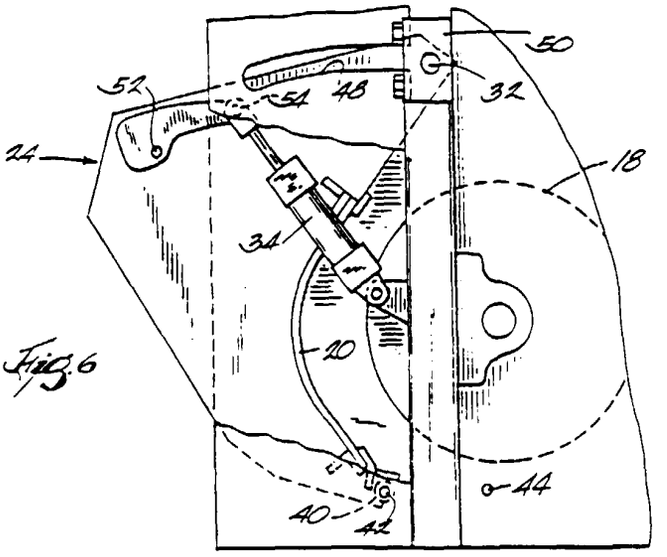

Fig. 6

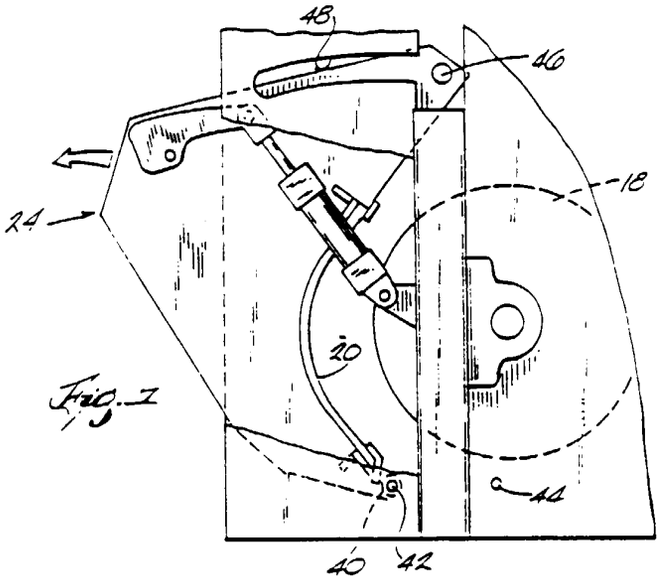

Fig. 7

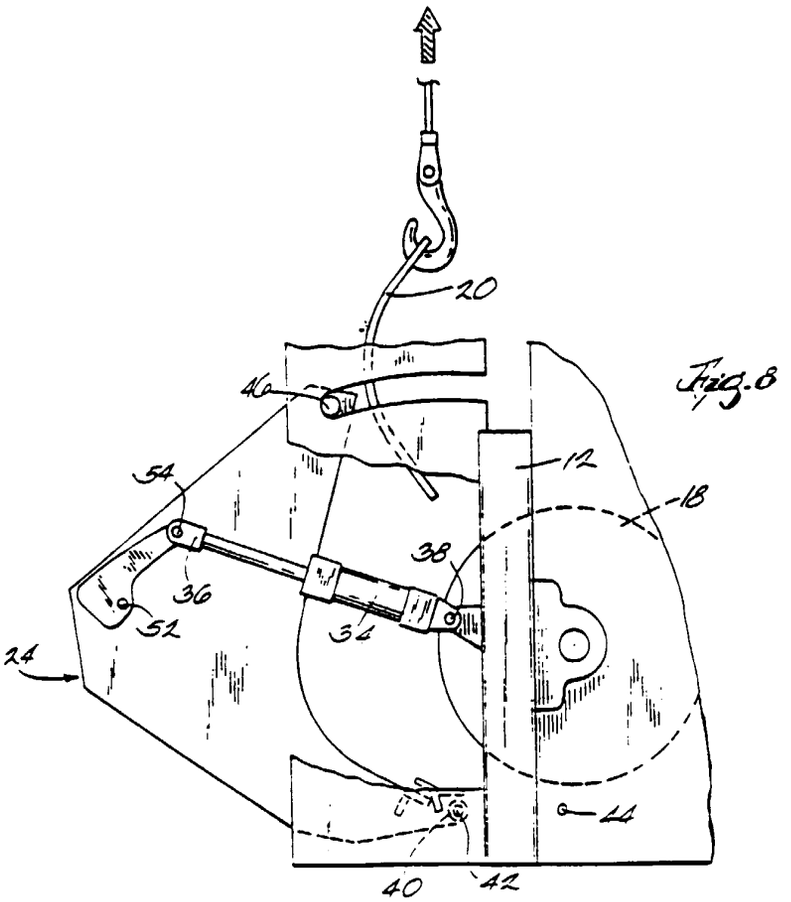

Fig. 8